



DEVELOPMENT OF A BRAIN BASED CLASSROOM

Dr. Sajeena S.

ABSTRACT

The objective of brain based learning is to move from memorizing information to meaningful learning. The brain based education is getting an important role in present education scenario, the teachers must be aware of the system. The present study analyzed the different strategies adopted for the brain based teaching. Six components of the teaching strategies were included for the study. The study was conducted among 60 school teachers from government and unaided schools. Questionnaire consisting of brain based teaching strategies was used for the data collection. Percentage analysis and t test were the statistical techniques used. Major findings were: Majority of the teachers are not so equipped with the strategies for brain based teaching, No significant difference in means were obtained in between the male and female, government and unaided school teachers.

INTRODUCTION:

The brain is a vastly complex and adaptive system with hundreds of billions of neurons and interneurons that can generate an astronomical number of neural nets, or groups of neurons acting in concert, from which our daily experience is constructed. We can accept that all brains are unique and a product of interactions with different environments, generating a lifetime of different and varied experiences; what scientists call plasticity. New neural pathways are created every time we use our brains in thinking through problems, but are lost forever if we do not use them.

The findings from neuroscience are now validating scientifically much of the new instructional strategies being advocated in educational reform efforts since the 1960s. Individualized instruction for instance is validated by findings concerning the importance of intrapersonal intelligence. Activity-based learning is now on solid footing with what we know about body-kinesthetic intelligence. Cooperative learning strategies are a logical extension of the growing body of knowledge about the importance of interpersonal/social intelligence and brain development.

In recent years, electrophysiological studies, neuropsychological tests and the use of imaging techniques (Vaid & Hall, 1991; Vigliocco, Vinson, Druks, Barber & Cappa, 2011; Weintraub, 2000) have created opportunities for researchers in the structural and functional studies of the human brain which have provided clues resulting in big changes for the field of education. By knowing how the brain works, brain-based learning supports learning by discovering the ways of maximum learning. This approach associates learning with the brain and the way it works, and mentions the positive effects of the brain's features and its enhancing performance on learning. The essential point of brain-based learning is meaningful learning.

PROBLEM SELECTED AND ITS SIGNIFICANCE:

Research in cognitive science and psychology is providing a clearer picture of the brain and the processes associated with thinking. According to Jensen (2000), brain based learning is "learning in accordance with the way the brain is naturally designed to learn". The process of changing data into knowing, according to Kolb (1983) is the transformation of experience. Through this information only, the learners can be changed from knowledge receivers to knowledge producers. Existing knowledge structures can be compared to the existing neural network in the brain. Learning occurs as neural connections are developed. As these neural connections are developed within the existing knowledge structures of the brain, the student constructs individual meaning from information and activities. Thus brain based learning follows the tenets of constructivist learning theory.

Most of the growth in the human brain occurs in early childhood: by the age of six, the brain in most children is approximately 90% of its adult size. This implies that intervention, while the brain is still growing, may be more effective than waiting until the brain is fully developed. Hence the study is significant in the sense that providing suitable learning environments and strategies by the teachers will surely enable the students in their significant brain development.

STATEMENT OF THE PROBLEM:

The present problem is how the teachers can help the students in their proper brain development so that the learners can generate new knowledge and ideas. So the problem can be stated as:

How a brain based classroom can be developed.

TITLE OF THE STUDY:

Development of a brain based classroom

HYPOTHESES OF THE STUDY:

1. Majority of the school teachers are not aware of the importance of the need of a brain based teaching.
2. There exists no significant difference between male and female teachers in adopting the strategies for brain based teaching.
3. There exists no significant difference between government and unaided school teachers in adopting the strategies for brain based teaching.

OBJECTIVES OF THE STUDY:

1. To analyze the strategies adopted by the teachers for a brain based teaching.
2. To compare the strategies for brain based teaching adopted by male and female teachers.
3. To compare the strategies for brain based teaching adopted by government and unaided school teachers.

METHOD ADOPTED FOR THE STUDY:

Survey method was adopted for the present study.

Sample:

The present investigation was carried out on a representative sample of 60 secondary school teachers from Trivandrum district. 30 teachers are from government schools and 30 are from unaided schools.

Tools used:

In order to understand the strategies adopted by the teachers for a brain based classroom the investigator constructed a questionnaire consisting of 6 components namely Stimulating environment, Problem-solving, Linking to previous knowledge, Allowing students' choice, Repetition and Using of image. 30 questions were prepared from these areas.

Statistical techniques used:

Percentage analysis and test of significance between the means are the statistical techniques used for the study.

ANALYSIS AND DISCUSSIONS:

Table 1: Distribution of sample on the basis of sex and type of management

	Male	Female	Total
Govt	12	18	30
Unaided	5	25	30
Total	17	43	60

Table 2: Percentage of responses on different components of brain based teaching strategies

Sl. No	Brain based teaching strategies	Percentage	
		Yes	No
1	Stimulating environment	38.33%	61.67%
2	Problem solving	58.33%	41.67%
3	Linking to previous knowledge	50%	50%
4	Allowing student's choice	43.67%	56.33%
5	Repetition	42.33%	57.67%
6	Using Images	52.67%	47.33%

From the table 2 it is clear that majority of the teachers are giving importance to the strategies such as problem solving and using images for the development of a brain based teaching. Half of the teachers are using the strategy of linking to previous knowledge. Majority of the teachers are not well versed with the strategies such as providing stimulating environment, allowing student's choice and repetition for the development of brain based teaching.

Table 3: Brain based teaching strategies adopted by the teachers on the basis of sex

Variables	Sample size	Mean	SD	t
Male	20	15.32	4.21	1.76
Female	40	12.98	5.93	

The calculated t value is less than the table value. So there exists no significant difference between the mean scores on teaching strategies adopted by male and female teachers.

Table 4: Brain based teaching strategies adopted by the teachers on the basis of management of schools

Variable	Sample size	Mean	SD	t
Govt	30	16.32	5.89	1.81
Unaided	30	13.48	6.25	

From the table it is clear that the calculated t value is less than the table value. So there exists no significant difference between the mean scores on strategies adopted by government and unaided school teachers.

MAJOR FINDINGS AND DISCUSSION:

1. Percentage analysis showed the percentage of teachers who were adopting brain based teaching strategies in classroom teaching.

From the analysis it is clear that only 38.33% of the teachers are using stimulating environment strategy. This strategy includes provision of suitable learning environments in the form of attractive class features like colour posters, high light notes, coloured markers etc for promoting memory and motivation in children. 58.33% of the teachers are using problem solving strategies like asking-open ended questions, higher level thinking questions, what if...type questions, brain teasers, experiments etc. half of the teachers are using the link to previous knowledge strategy by the methods like tests or questions about previous knowledge, expand on what students understand etc. Allowing students choice strategy are used by 43.67% of the teachers through the methods like giving students choices, providing options for taking notes, outline, concept map etc. 42.33% of the teachers are familiar with the repetition strategy for strengthening the connection to the brain through the provision of previewing and reviewing strategies, video clips, posters, cooperative learning etc. The use of image strategy was followed by 52.67% of teachers through the use of working models, project based assignments etc because 90% of all information are absorbed by the brain through visuals.

2. The t-test showed no significant difference in mean scores of male and female teachers in adopting brain based teaching strategies.

The lack of difference may be due to the equal opportunities existing among female and male teachers on the basis of quality of education, equality of training, etc.

3. There exists no significant difference between the mean scores of government and unaided school teachers.

From the study no significant difference was noted between government and unaided school teachers. Both groups showed an average result in adopting the strategies for the brain based teaching.

CONCLUSION:

Depending upon the topic some students can think abstractly, while others have a limited background and are still thinking on a concrete level. Building the necessary neural connections by exposure, repetition and practice is important to the student. Brain based learning is getting its importance in the sense that rote learning is not the way for the productive thinking. So in order to create new knowledge, students must be equipped in brain based teaching learning processes. Teachers should use a great deal of real life activities including class room demonstrations, projects, field trips, etc. because spatial memory is generally best invoked through experiential learning. Real world problem solving promotes creative and meaningful judgment and also brain grows by trying to solve problems. Brain research suggests that the brain learns best when confronted with a balance between stress and comfort: high challenge and low threat. The brain needs some challenge, or environmental press that generates stress as described above to activate emotions and learning. Teachers can promote brain based learning by adopting some simple strategies like:

1. Start with what the students know and move forward to what they need to know.
2. Motivate students.
3. Helps the students to be more successful
4. Reduce stress among students
5. Give project based and problem based instructions
6. Provide visualization or guided imagery
7. Engage students in brain storming etc.

REFERENCES:

1. Hansen, L., & Monk, M. (2002). Brain development, structuring of learning and science education: Where are we now? A review of some recent research. *International Journal of Science Education*, 24(4), 343-356. doi: 10.1080/09500690110049105.
2. Jensen, E. (2000). *Brain based learning*. San Diego, CA: The Brain Store.
3. Kolb, D. (1983). *Experiential Learning*. New York: David McKay.
4. Vaid, J., & Hall, D. (1991). Neuropsychological perspectives on bilingualism: Right, left and center. In A. G. Reynolds (Ed.), *Bilingualism, multiculturalism and second language learning* (pp. 81-112). Hillsdale, NJ: Lawrence Erlbaum Associates
5. Vigliocco, G., Vinson, D. P., Druks, J., Barber, H., & Cappa, S. F. (2011). Nouns and verbs in the brain: A review of behavioural, electrophysiological, neuropsychological and imaging studies. *Neuroscience and Biobehavioral Reviews*, 35, 407-426. doi:10.1016/j.neubiorev.2010.04.007.
6. Weintraub, S. (2000). Neuropsychological assessment of mental state. In M.M. Mesulam (Ed.), *Principles of behavioral and cognitive neurology* (2nd ed., pp. 121-173). New York: Oxford University Press.
7. <http://www.designshare.com/Research/BrainBasedLearn98.html>